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Outline

- **The Goal**
  - The goal is to be inclusive - a national facility meeting all testing requirements for beta=1, beta<1, and CW modules, and bare cavities
- **Advantages of the Meson Lab**
  - Available cryogenics
  - Available space, including a long beam line
  - Available power
- **Disadvantages of the Meson Lab**
  - We have to clean up the Meson East area - This is almost complete
  - Space is very tight for the full facility
  - Cryogenics is not adequate for the full facility
  - The building is not exactly a show place
- **The disadvantages have forced us to make a major change in the plan. Distributing the test facility**

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Meson Lab 1

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M-East in September 2004

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M-Polarized in September 2004

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M-East in February 2005

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M-Polarized in February 2005

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Existing Cryogenic Power

- Three satellite refrigerators operating as liquefiers
  - 4000 liters LHe inventory + equal gas storage + controls
  - Total power equivalent to ~ 90 Watts at 2 K
    - We are assuming 60 watts @ 2 K available
    - Remainder for 5 K shields
    - Higher temperature shields cooled with LN2
- Low temperature via vacuum pumping on helium
  - Two vacuum pumps each capable of >10 g/sec @ 20 torr (2 K)
  - Transfer lines are presently close to needed locations

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Refrigerator

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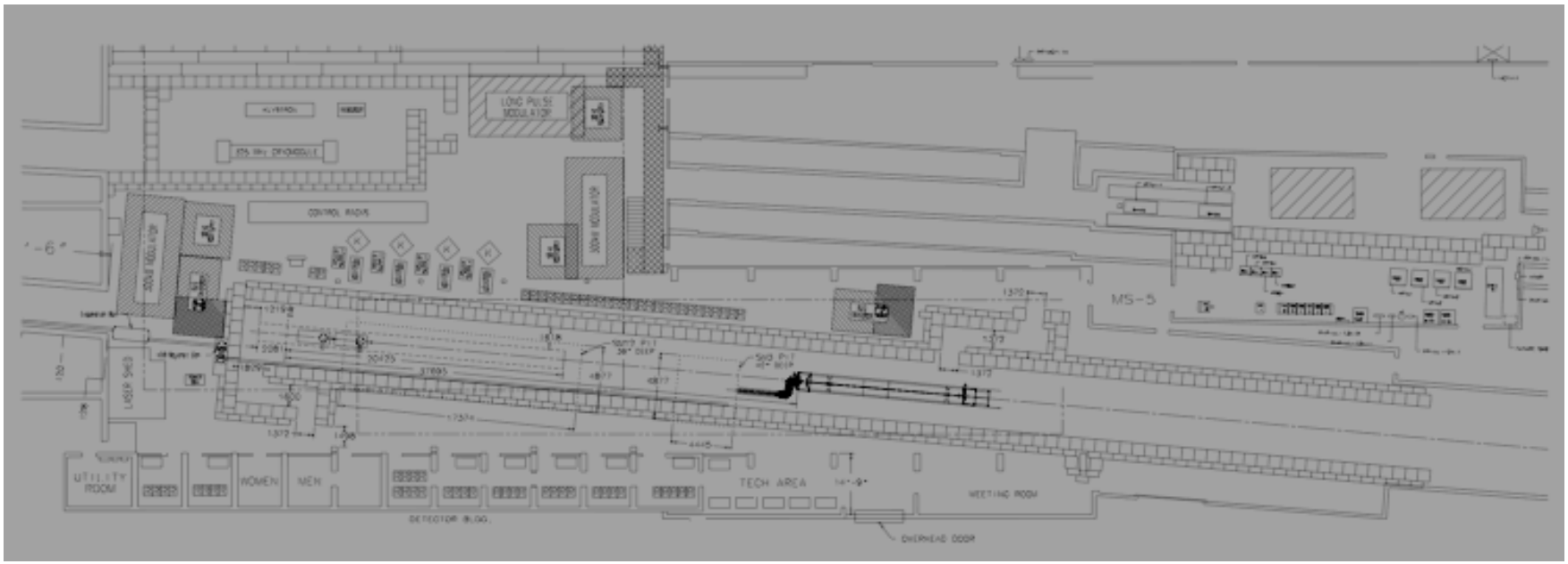
Complete Layout in ME & MP



Limitations of Meson Lab Operation

- The space is crowded
  - Difficult to fit everything in even at this early planning stage
  - The CW and the Single-module test facilities do not exist in Meson
  - Space limits shielding that may be required for full Photo-injector operation
- Scheduling simultaneous tests is not possible until a new refrigerator is operational
  - Even with a CW area, there is no capability of an independent beam for CW module tests or for T<2K
  - Full Photo-injector cannot operate > 1 Hz
- **Decide to change the plan**
  - Put the heavy cryogenic loads at a different place with a new refrigerator
  - Leave the Single-module test facility and Proton Driver at Meson lab
    - Maintain the possibility of early tests
  - Consider putting the bare-cavity test area at MTF

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Outside New Muon Facing North

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Inside New Muon Facing North

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Inside New Muon Facing South

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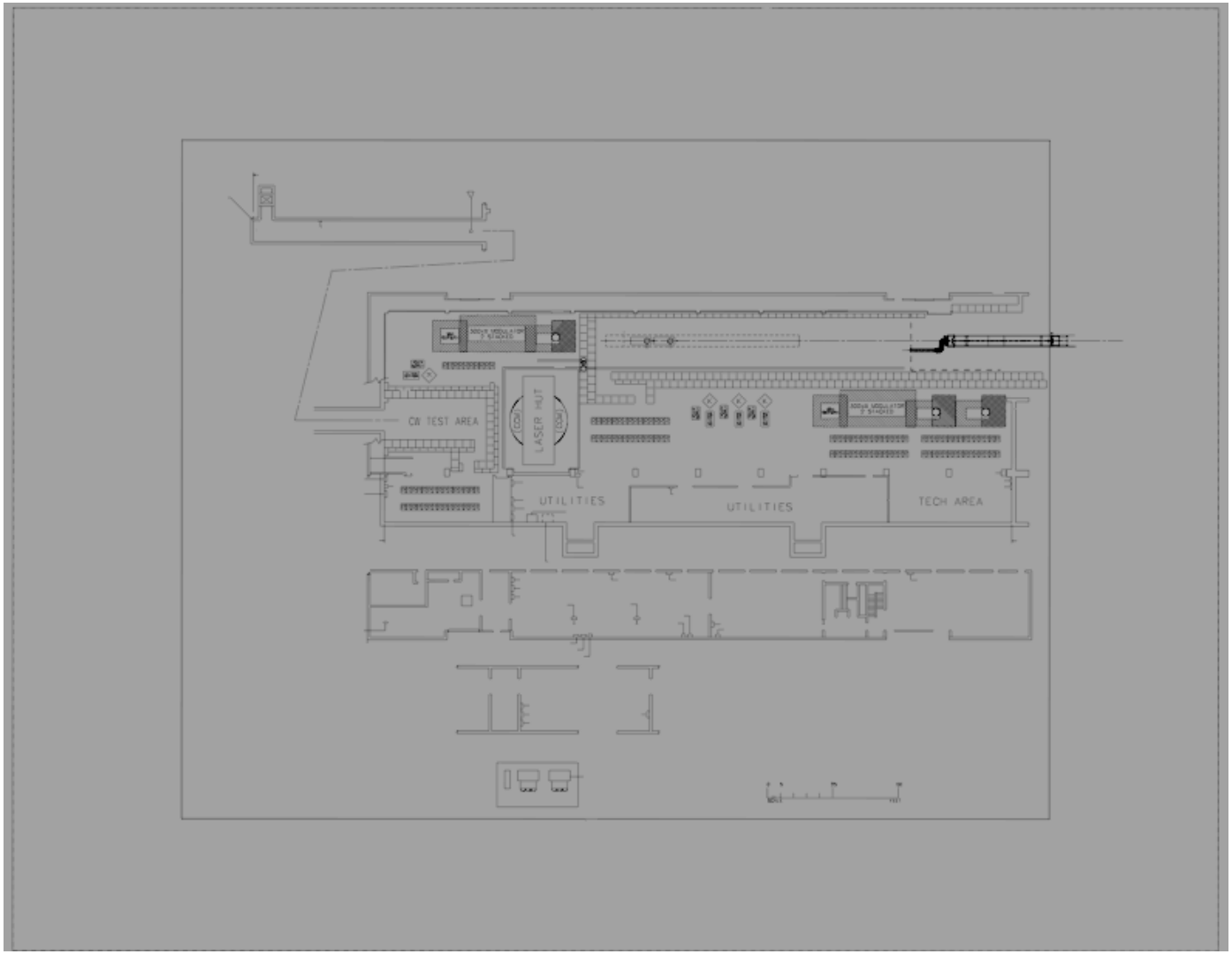
SMTF Layout at New Muon



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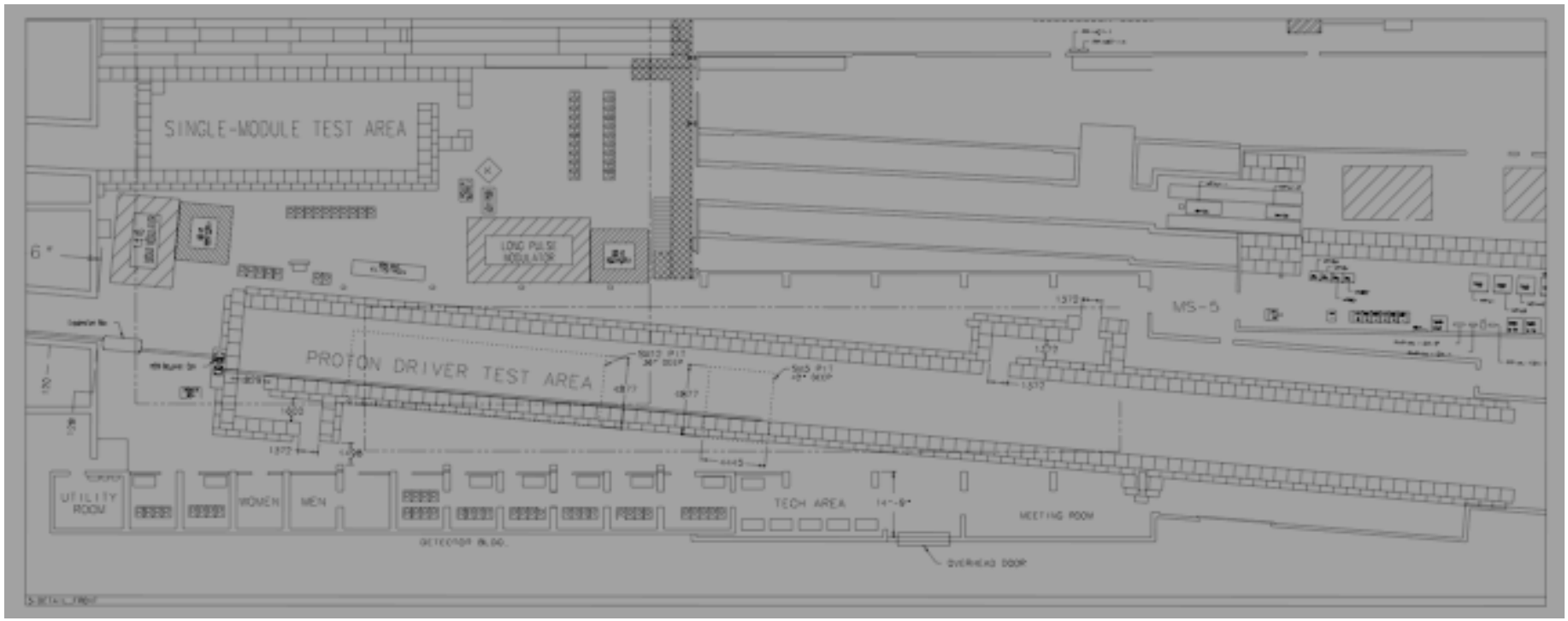
SMTF Layout at Meson Lab



Plusses & Minuses

- **Plusses**
  - **Enough space to do all the necessary testing; safe and expandable in all three areas**
  - **Photo-injector can operate indefinitely in showplace area**
  - **Maintain the possibility of early tests**
- **Minuses**
  - **Have to build a refrigerator and building very soon. It becomes critical.**
  - **Have to create a tunnel extension for Photo-injector**
    - **Simplifies radiation shielding**
- First tests
  - Could be about the end of this year; A single-cavity module exists to test.

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Last Slide